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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

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January 23, 2008

TO: Internal File

THRU: Dana Dean, P.E., Environmental Scientist III

FROM: Priscilla Burton, CPSSc, Environmental Scientist III PWB by ar

RE: Waste Rock Pile Expansion, Canyon Fuel Company, Skyline Mine, C/007/0005, Task ID #2890

SUMMARY:

Canyon Fuel Company provided supplemental information on December 10, 2007, for the plans to construct the waste pile on top of the existing pile. An additional 5.13 acres will be disturbed on an 80% slope above the existing waste rock site, bring the waste rock disturbed area to 12.81 acres. I have twice previously reviewed the proposal to expand the life of the waste rock facility, as Tasks 2800 and 2844.

TECHNICAL ANALYSIS:

GENERAL CONTENTS

IDENTIFICATION OF INTERESTS

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

Analysis:

General Chapter 1 volume contains information on corporate ownership for Canyon Fuel Company's affiliated Utah mines: SUFCO Mine, Skyline Mine, Soldier Canyon Mine, Banning Loadout, and Dugout Canyon Mines. (Section 111 of the MRP).

Section 112.400 of the MRP and Table 1-1 and Figure 1-1 (A – D) of General Chapter 1 provide a listing of affiliated coal mining operations under the control of Canyon Fuel Co., LLC. The listing includes the affiliated Utah mines itemized in Sec 111 and the successfully reclaimed bond release sites: Gordon Creek No. 2, 7, and 8, Gordon Creek No. 3 and 6, and Huntington Canyon No. 4 mine.

Figure 1-1 (A-D) also provides an organizational chart showing corporate ownership and control of Canyon Fuel Co., LLC by Arch Coal, Inc. The list of officers and directors for Canyon Fuel Co., LLC and its four corporate owners Arch Western Bituminous Group, LLC; Arch Western Resources, LLC; Arch Western Acquisitions Corp; and Arch Coal, Inc.) is found in Appendix 1-1. App. 1-1 was last updated in February 2007. Changes in officers are clearly noted with beginning and ending dates and are attested to by notarized statements from each corporate entity.

Findings:

The information provided meets the requirements of the Regulations.

VIOLATION INFORMATION

Regulatory Reference: 30 CFR 773.15(b); 30 CFR 773.23; 30 CFR 778.14; R645-300-132; R645-301-113

Analysis:

Section 113 of the MRP indicates that a current listing of violation information is provided in the General Chapter 1 volume for Utah affiliated mines. The most current list dated December 2004 – 2006 is found in Table 1-2.

Findings:

The information provided meets the requirements of the Regulations.

RIGHT OF ENTRY

Regulatory Reference: 30 CFR 778.15; R645-301-114

Analysis:

The Waste Rock lease agreement between the Telonis Trust and Canyon Fuel Company and subsequent amendments are included in the MRP Section 3.2, Exhibit A. The March 1, 2007 lease amendment provides right of entry to 36.51 acres in T. 13 S., R. 7 E. Sec. 4 and 5 and will expire in 2020 (MRP Section 4.16, p. 4-89). With this right of entry, the Permittee plans to expand the disturbed area of the waste rock site from 7.68 acres to 12.81 acres over the next 15 years (Table 2.12.2-1).

Findings:

Information provided meets the requirements for right of entry for the expanded waste rock storage site.

LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS

Regulatory Reference: 30 CFR 778.16; 30 CFR 779.12(a); 30 CFR 779.24(a)(b)(c); R645-300-121.120; R645-301-112.800; R645-300-141; R645-301-115.

Analysis:

The application does not change the status of unsuitability claims for the coal mining and reclamation operation.

Findings:

The available information meets the requirements of the Regulations.

PERMIT TERM

Regulatory References: 30 CFR 778.17; R645-301-116.

Analysis:

This amendment does not change the permit renewal dates.

Findings:

The information available meets the requirements of the Regulations.

PUBLIC NOTICE AND COMMENT

Regulatory References: 30 CFR 778.21; 30 CFR 773.13; R645-300-120; R645-301-117.200.

Analysis:

Certificates of Insurance are located in the General Chapter 1 Volume, App. 1-2. The insurance provider is Marsh USA, Inc. and the company affording coverage is Ace American Insurance Co. The Division of Oil Gas and Mining is listed as the Certificate holder. Policies current through July 2008 are on file at the Division.

This amendment is not considered a significant revision and therefore, no public notice is required.

Findings:

The information presented meets the requirements of the Regulations.

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

Analysis:

Waste Rock Site

Section 2.11, Dwg 2.11-2 and Appendix Volume A-2 provide information on the soils of the waste rock site. The information presented in these two locations is taken from the published Carbon County Order III soil survey. The Carbon County soil survey indicates two map units: #23 Curecanti family/Pathead Complex (north facing slopes) and #115 Trag stony loam, 30 – 60% slopes (west facing slopes). The 2006 Clement survey further designates Map Unit #117, Trag-Beje-Senchert Complex on the north facing slope, Figure 1 (scale 1:33,000). Figure 1a, (scale 1:2,400) designates the two soil types that are present in the proposed disturbed area.

The waste rock expansion area is illustrated on Dwg No. 3.2.8-2 Revision 7 and on Figure 1a of the 2006 Clement Survey, Appendix Volume A2, Volume 2. Table 2.12.2-1 classifies the vegetation of the proposed disturbed area in acres as 3.4 acres aspen and 1.73 acres sagebrush/grass. The distinction in vegetation parallels the slope face and the soil type. Thus, the Division concludes that two-thirds of the expansion area (3.4 acres aspen/5.13 total acres) will disturb soils represented by soil pit SP1. The remaining third of the proposed expansion will disturb soils represented by soil pit SP2 (Senchert Series). For SP1, the soil horizons are as follows: A = 0 – 9 inches, B = 9 – 14 in., BC = 14 – 18 in. For SP2, the soil horizons are as follows: A = 0 – 10 inches, B = 10 – 23 in., BC = 23 – 38 in.

The two soil pits that are as shown on Figure 1a (scale 1:12,000) were excavated by hand to a depth of three feet. Due to the time of year, the surface soils were thawed with a propane torch prior to digging. Soils were described. Test pits were thoroughly photographed. Soil samples were provided to the laboratory seven months later in July 2007.

The consultant photographed and described iron staining in the C horizon (46 – 97 cm or 18 – 38 in.) of SP-1 and in the B horizon (25 – 58 cm or 9.8 – 23 in.) of SP-2, as well as a gray appearance of the sandstone casts in the BC horizon (58 – 97 cm or 23 – 38 in.) of SP-2. Iron deposition and gleying are redox features that indicate periods of soil saturation. The soil survey does not mention the climate regime or the elevation, but it is known by the Division to be cryic at the site elevation of 8,100 ft. and subject to perma-frost. This saturation/freeze/thaw system is associated with the redox features noted in the profile. The digging became difficult below 38 inches in the C horizon of both pits. Depth to the lithic contact was estimated at 200 cm or about six feet (App.Vol A-2, Vol. 2, Clement Soil Survey).

Findings:

The Permittee meets the environmental resource requirements of the Regulations.

OPERATION PLAN

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

Analysis:

Topsoil Removal and Storage

Section 4.6.4.1 of the MRP indicates a total soil depth of 38 inches and a the topsoil stripping depth between 18 and 20 inches. The soil survey indicates that at a minimum one foot of topsoil is suitable. However greater depths must be salvaged to provide the necessary cover over the waste.

An area sufficient for "one to two years of waste rock placement" will be stripped of topsoil and stockpiled (Section 2.11). A site has been located to stockpile approximately 4,500 yd3 of topsoil. At a topsoil stripping depth of 18 inches, this allows for 1.8 acres to be stripped of soil and stockpiled. Contemporaneous reclamation of the site will allow no more than three acres of the site to be without topsoil at one time (Sec. 4.6.4.1). The stockpile location is shown on Plate 3.2.8-2. The topsoil stockpile will be seeded with the mix described in Table 4.6-1.

Findings:

The information provided meets the Operational Soil Resource information.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Refuse Piles

Approximately 30,000 yd3 capacity remained at the existing waste rock site in December 2006 (Volume 5a Tab 16). With an annual disposal need for 8,000 yd3 , the 5.13 acre expansion will allow for an additional 37 years of operation (Section 3.2.8, p. 3-49). [The 5.13 acres

provides space for an additional 300, 294 yd3. If the waste rock is generated at a rate of 8,000 yd3/yr (9,840 tons @ 91 lb/cu ft density), the expansion will allow for 37 more years of operation.] This capacity allows for 2.5 times the rate of use over the past 20 years, based upon the previous estimation of 2,694 yd^3 /yr (4,000 tons at 110 lb/cu ft density, see replaced page 3-49a).

Design information for the site is found in Volume 5a Engineering Calculations Section 15a, Waste Rock Pile Slope Stability Analysis, as well as Section 16, Engineering Calculations. The waste will be placed in two foot compacted lifts and sloped 2h:1v to the east. Each twenty foot lift will be reclaimed (Section 3.2, pg. 3.55 – 3.56a).

Findings:

The Permittee has met the R645-301-536 requirement to disclose the capacity of the coal mine waste storage designs.

RECLAMATION PLAN

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

Redistribution

Reclamation of the site is shown on Map 4.16.1-1C without a pond retained and on Map 4.16.1-1B with the pond retained (at landowners request). Redistribution of the topsoil and subsoil removed from the site will be returned to the 5.13 ac of proposed disturbance. Other reclamation activities remain unchanged.

Findings:

The information provided meets the requirements of the regulations for replacement of topsoil.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

Backfilling and Grading On Steep Slopes

The undisturbed slope is 80%, steeper than 1.5h:1v. The reclamation plan describes placement of the material in two foot lifts and reclamation of each 20 ft increment of fill ([pg 3-56]. Plate 3.2.8-2 illustrates a 2:1 slope with a flat area at the top of the pile. The pile will grade into the undisturbed mountain over a five foot elevation difference.

Currently the permittee does not cover the waste with four feet of material, due to a lack of pre-existing soil at the former mine site.

In accordance with the requirements of R645-301-553.252, the Permittee has provided photographs and chemical analyses to show that the requirements of R645-301-244 (stability) and R645-301-353 through 357 (vegetation establishment and success) can be met with less than four feet of cover over the mine waste (Table 4.6-5 and discussion in Section 4.6.4.1).

Special Provisions for Steep Slope Mining

Findings:

The information provided meets the requirements of backfilling and grading.

RECOMMENDATIONS:

The Division should approve this application.